REPORT
ON THE INVESTIGATION OF SUBSURFACE PETROLEUM CONTAMINATION at

DUFRESNE'S SERVICE CENTER
147 MAIN STREET
WINOOSKI, VERMONT

November 1991

Prepared for:

State Of Vermont
Hazardous Materials Management Division
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I. INTRODUCTION

This report details the investigation of subsurface petroleum contamination at Dufresne's Service Center, located at 147 Main Street, Winooski, Vermont (refer to Figure 1, Site Location Map). The investigation has been conducted by Griffin International, Inc. (Griffin) for the Hazardous Materials Management Division (HMMD) of the State of Vermont Department of Environmental Conservation (DEC), as a result of reports of intermittent petroleum vapors in the adjacent Hazen residence.

A. Objectives

The objectives of this investigation were to:

1) Identify the source or sources of the petroleum vapors that are impacting the Hazen residence and their route of entry into the residence.

2) Determine the degree and extent of the soil, ground water, and soil gas contamination resulting from possible gasoline leaks at Dufresne's.

3) Determine the identity and location of all potential receptors.

4) Make recommendations as to appropriate measures to mitigate and/or eliminate the contamination.

B. Scope of Services

The following scope of work was performed:

1) Vermont Department of Environmental Conservation (DEC) records concerning the site were reviewed on 21, 22, and 23 August 1991. The files reviewed included those of the Hazardous Materials Management Division (HMMD) and the Water Quality Division. Local water department officials and other persons with knowledge of site activities were contacted regarding reports of oil or chemical spills in the vicinity of the site, the local use of groundwater for drinking, and the history of site usage.

2) Historical aerial photographs (dated 1962 and 1974) were reviewed to evaluate previous site activities.

3) The site was visited to view surface conditions.

4) Subsurface explorations, consisting of six soil boring/monitoring well installations and one soil boring/soil vapor point installation, were performed.

5) Soil samples collected from the borings were test-screened with a portable photo-ionization detector (PID).

6) Water samples from five monitor wells and the Hazen sump were collected and submitted for chemical analysis.

II. SITE BACKGROUND

A. Site Description

Dufresne's Service Center occupies an approximately 0.25-acre area on the northeast corner of Main and Platt Streets in the City of Winooski, Vermont. Figure 2 (Site Plan) shows the location of relevant buildings, monitoring wells, the soil vapor point, and the Hazen sump. The site is located on a terrace above the Winooski River, at an elevation of about 220 feet NGVD (National Geodetic Vertical Datum). The area surrounding the site exhibits a mixture of commercial and residential uses.

B. Project History

On 6 June 1990, two underground storage tanks (USTs) at Dufresne's Service Center failed a precision leak test. One UST, a 3000-gallon unleaded "plus" gasoline tank, was emptied and removed from service. The second UST, a 4000-gallon unleaded "super" gasoline tank, was returned to service after a piping leak was discovered and repaired.

On 6 March 1991, the Vermont DEC received a report from Winooski Fire Chief David Bergeron that gasoline had been observed on the water surface in the Hazen sump, and that the resulting vapors had required evacuation of the Hazen residence for approximately 24 hours. According to the report, Mr. Hazen had reported having intermittent gasoline vapors in his basement since December 1989.

The DEC issued a Request-For-Proposals (RFP) to further evaluate the subsurface conditions at Dufresne's on 27 June 1991. Griffin was contracted to perform the investigation on 19 September 1991.

On 3 November 1991, the DEC received a second report from the Winooski Fire Chief of gasoline vapors in the Hazen residence. In a telephone conversation, Mr. Hazen reported that there had been a heavy sheen of gasoline on water in his sump. After he pumped out the sump and ventilated the basement for approximately one hour, the vapors dissipated. Winooski Fire Chief David Bergeron stated in a telephone conversation that the sump had been pumped out prior to his arrival, and that he did not observe any petroleum sheens on the surface of the sump, but did notice petroleum vapors in the Hazen residence during his visit.

Griffin collected a second water sample from the Hazen sump on 4 November 1991, and screened the basement walls and the soil vapor point with a PID. No odors, sheens, or elevated PID readings were observed during Griffin's visit. The water

sample was submitted for laboratory analysis (by EPA Method 602), but the analysis results had not been received as of the time this report was completed.

C. Background Investigation

Griffin conducted a background investigation prior to beginning field work, which consisted of a review of State files, discussions with local officials, and a site visit.

The detailed results of the background investigation are contained in Griffin's Work Plan, submitted to the State on 5 September 1991. The investigation revealed one downgradient water supply well within one mile of the site, belonging to Mr. John Rauille and located approximately 5000 feet east of the site. Three permitted UST facilities exist along Main Street within one-half mile north of the site, but none of the facilities have reported spills within the last five years.

According to Mr. Ray Dufresne, owner of Dufresne's Service Center, the site has been operated as a gasoline station since 1939. The on-site building was partially destroyed by fire in January 1991, but has since been rebuilt. Several apartments are located in the southeastern part of the building. A sump is located in the basement of the Dufresne's building, but no oily sheens or vapors in the Dufresne building have been reported.

There are currently four active on-site USTs, including two 4000-gallon "regular" unleaded gasoline tanks, one "super" unleaded gasoline tank, and a 1000-gallon kerosene tank. A 3000-gallon "plus" unleaded gasoline UST, which failed the June 1990 tightness test, and a diesel UST of unknown capacity are disused but remain in place. The ages of the presently installed USTs are unknown, but they are believed to exceed twenty years.

III. SUBSURFACE EXPLORATIONS

A. Monitoring Well Installations

On 26 and 27 September and 1 October 1991, six monitoring wells were installed with a hollow-stem auger drill rig by Green Mountain Boring, under the supervision of a Griffin hydrogeologist (see Figure 2, Site Plan, for locations).

The objectives of the monitoring well installations were to determine the degree and extent of soil and ground water contamination at the site, and to evaluate potential sources of contamination.

In the initial work plan, five monitoring wells and two soil vent points were planned, and groundwater was expected to be at approximately six feet below the surface. Groundwater was apparently not encountered in MW1 until 24.5 feet, however. After consultation with a DEC representative, a sixth monitoring well was installed in place of the second soil vent point, to evaluate whether an unconfined aquifer is present between Dufresne's and the Hazen residence.

The wells are constructed of two-inch diameter well screen and casing. The annulus between the borehole wall and the screened section of each well contains a silica gravel pack to filter fine sediments from the well. The annulus of each well also contains a bentonite seal to prevent surface water (and, in MW1, water from the perched aquifer above the screened interval) from infiltrating into the well. Each well is protected at the surface by a steel, flush-mount well protector with a bolt-down cover. Well construction details are listed on the well logs in Appendix A.

After installation, each monitoring well was developed with a clean Teflon bailer by the Griffin hydrogeologist. Between installation of each monitoring well, all down-hole tools were decontaminated with a portable steam cleaner to prevent cross-contamination between well sites.

Approximately two cubic yards of contaminated soils were generated during the monitoring well and soil vapor point installation. The contaminated soils were placed on and covered with polyethylene sheeting on-site pending decisions on treatment and/or disposal.

B. Soil Vapor Point Installation

The soil vapor point (VP1) was installed on 1 October 1991 with a hollow-stem auger drill rig by Green Mountain Boring, under the supervision of a Griffin hydrogeologist (see Figure 2, Site Plan, for location). The vapor point was located near

the northeast corner of Dufresne's, approximately twenty feet north of MW1, to determine the level of petroleum vapors in the soil between Dufresne's and the Hazen residence.

Vapor point VP1 was constructed in the same manner as the monitoring wells, with the exception that the bottom of the vapor point was capped just above the water table. Vapor point construction details are presented in Appendix A.

V. ENVIRONMENTAL CONDITIONS

A. Bedrock Geology

The Geologic Map of Vermont indicates that bedrock below the site consists of the Winooski dolomite, which is a Cambrian-age sedimentary rock.

Bedrock was not encountered during subsurface explorations performed for this investigation.

B. Surficial Geology

Overburden materials covering the site are mapped as pebbly marine sands, which were deposited in a stream delta along the margin of the Champlain Sea.

Soils encountered during subsurface explorations differed substantially from the mapped sediments. The native materials encountered in all of the borings consisted principally of clay and/or silt, occasionally with one-inch thick lenses of fine sand, which probably are lake-bottom sediments from the post-glacial Lake Vermont. Glacial till was encountered in a split-spoon sample from MW1 at a depth of approximately 24.5 feet.

C. Surface Water

As shown on Figure 1 (Site Location Map), the Winooski River is located approximately 1500 feet south of the site. No other surface water bodies are located within one-half mile of the site.

D. Groundwater

Groundwater was encountered in each of the monitoring wells installed during subsurface explorations at the site. In MW2 - MW6, groundwater was encountered at depths of between five and six feet below the surface. At MW1, ground water was encountered at a depth of 24.5 feet, and rose to a static level of approximately ten feet below the surface.

These results suggest that two aquifers were encountered during subsurface investigations for this study. The aquifer encountered in MW2 - MW6 appears to be a perched water table above a clay confining layer. The aquifer encountered in MW1 is apparently confined in glacial till below the clay layer.

On 15 October 1991, Griffin measured relative water levels in the six on-site monitoring wells. Measurements were made by subtracting measured depth-to-water from surveyed top-of-casing elevations, with the top-of-casing of MW5 arbitrarily assigned an elevation of 100'. Water level data is presented in Appendix B.

The water table surface was calculated using the water level measurements from MW2 - MW6 (see Groundwater Contour Map, Figure 4). MW1 was not used because it apparently intersected a separate aquifer. Groundwater in the area was generally flowing to the east, at an average gradient of 0.55%.

V. CHEMICAL TESTING

A. Test Screening of Soils

Undisturbed soil cores were collected from each borehole at five-foot intervals, using a split-spoon sampler. Samples were placed into Ziploc bags, shaken, then screened for volatile organic compounds (VOCs) using an HNU PI-101 portable photoionization detector (PID) calibrated to benzene.

Soil test-screening results are presented in the detailed well logs in Appendix A. Elevated PID readings were obtained in nearly every boring, with the exception of VP1, which was only drilled to a depth of six feet. PID readings in the two northernmost borings between Dufresne's and the Hazen residence (MW1 and VP1) were generally lower than PID readings from other areas. PID readings above 100 ppm were obtained in MW3-S2 (6' depth), MW4-S2 (5-7' depth), and MW6-S3 (9' depth).

Sand lenses in split-spoon samples collected from MW1 had a much stronger petroleum odor than surrounding layers of clay, but were not separately test-screened.

B. Laboratory Analyses

On 7 October 1991, Griffin collected groundwater samples from monitoring wells MW2 - MW6 and the Hazen sump, for laboratory analysis of VOCs (by EPA Method 8240) and Total Petroleum Hydrocarbons (TPH, by EPA Method 418.1). At the request of the DEC, MW6 was sampled in place of MW1, because MW6 was believed to be more representative of shallow water contamination that may be impacting the Hazen residence. Equipment blank, trip blank, and duplicate samples were also collected.

At least three well volumes were purged by bailing from each monitoring well prior to sample collection. A grab sample was collected from the Hazen sump.

Results of the laboratory analyses are summarized in Table 1. Spatial distribution of major contaminant is shown in Figure 3 (Contaminant Distribution Map). Laboratory report forms are presented in Appendix C.

The trip blank and equipment blank samples were below detection limits for all compounds tested. The duplicate monitoring well sample (MW6-dup) was within 15% of MW6 for all 8240 compounds except toluene, for which the duplicate was 27% higher. TPH in the duplicate MW6 sample was 43% higher than in the first sample. According to the analytical laboratory director, the TPH method for water samples measures both non-aqueous phase and dissolved hydrocarbons, and duplicate samples commonly contain different concentrations of the non-aqueous phase hydrocarbons.

MTBE was detected in wells MW2 - MW5, with the highest concentrations in MW3 (17,100 parts per billion, or ppb) and MW4 (2,170 ppb), the wells located closest to the gasoline USTs. MTBE is a gasoline additive used since 1979, for which the State of Vermont has issued a Health Advisory guideline standard of 40 ppb. MTBE levels exceeded the State standard in all wells in which it was detected.

BTEX compounds (benzene, toluene, ethylbenzene, and xylenes) were detected in all of the sampled monitoring wells. As was the case with MTBE, the highest BTEX concentrations were measured in wells MW3 (10,575 ppb total BTEX) and MW4 (16,220 ppb total BTEX). BTEX compounds are present in high concentrations in gasoline, but are also found at lower levels in other petroleum fuels. All BTEX compounds are regulated in groundwater in the State of Vermont. The State of Vermont has issued a Maximum Contaminant Level (MCL) of 5 ppb for benzene, and has issued Health Advisory guideline levels for toluene (2420 ppb), ethylbenzene (680 ppb), and xylenes (400 ppb). Benzene levels exceeded the State standard in all of the sampled monitoring wells. Ethylbenzene and toluene exceeded the State standards in MW4; xylenes exceeded the State standard in MW3, MW4, and MW6.

Total Petroleum Hydrocarbons (TPH) were detected in all of the sampled monitoring wells except MW5, at levels between 2.3 and 9.5 parts per million (ppm). TPH are not regulated in the State of Vermont. Detectable levels of TPH in the absence of MTBE or high concentrations of BTEX commonly indicate contamination by a petroleum fuel other than gasoline. All of the wells in which TPH was detected, however, also had significant levels of BTEX and, with the exception of MW6, MTBE.

Carbon disulfide, an industrial solvent which is not regulated in ground water in Vermont, was detected in the Hazen sump at 76.7 ppb. Carbon disulfide was not detected in any of the monitoring wells located upgradient of the sump, and no sources are known to exist upgradient of the site.

1,2-Dichloroethane (DCA) was detected in monitoring well MW2 at 10 ppb, in MW4 at 52.2ppb, and in MW5 at 19.8 ppb. The uses of DCA include: a lead scavenger additive in antiknock gasoline; metal degreasing; soaps and scouring compounds; and paint, varnish, and finisher removers. The State of Vermont has issued an MCL of 5 ppb for DCA.

VI. CONCLUSIONS

Based on the above-described investigation of subsurface petroleum contamination at Dufresne's Service Center in Winooski, Vermont, Griffin has reached the following conclusions:

1. There has been a release or releases of gasoline, and possibly other petroleum fuels, to the subsurface at Dufresne's Service Center. VOCs were detected in soil samples collected from borings on the site and test-screened with a PID. MTBE and BTEX compounds were detected in water samples collected from the monitoring wells on the site, at levels that exceed State drinking water standards. BTEX compounds, but not MTBE, were detected in monitoring well MW6, located between Dufresne's and the Hazen residence, suggesting that the contaminant there may be older gasoline or another petroleum fuel such as diesel or kerosene.

2. Although the source(s) of the contamination has not been positively identified, it is likely that the gasoline USTs were involved. BTEX and MTBE levels were highest in wells located closest to the gasoline USTs. The piping in the "super" unleaded gasoline UST was found to be leaking after the June 1990 tightness test, and the "plus" unleaded gasoline UST failed the June 1990 tightness test.

3. The release(s) at Dufresne's Service Center has resulted in contamination of groundwater beneath, and downgradient of, the spill area(s). The contaminated groundwater has migrated north and east to the vicinity of the Hazen residence.

4. Contaminated groundwater is apparently the principal source of petroleum vapors in the Hazen residence, as suggested by the sheens reportedly observed on the water surface in the Hazen sump. The cause of the intermittent nature of the vapors remains uncertain, but may be due to water table variations, transport of contaminated groundwater as discrete slugs in sand lenses, or some other factor.

5. At least some of the gasoline release(s) at Dufresne's occurred after 1979, as indicated by the presence of MTBE in groundwater samples from the monitoring wells. The amount and duration of the release(s), however, are unknown.

6. The ages of the on-site USTs are unknown, but are believed to exceed twenty years.

7. 1,2-dichloroethane (DCA) was detected in water from three monitoring wells at levels that exceed the State MCL for this compound. DCA has been used as a gasoline additive, and thus the source of the DCA detected is likely the gasoline release(s) at Dufresne's Service Center.

8. Carbon disulfide was detected in the Hazen sump, but not in the on-site monitoring wells. The source of the carbon disulfide is unknown.

9. Soils at the site consist principally of clays and silt. The water table surface is generally between five and six feet below the surface. A confined aquifer, in glacial till below the clay and silt, was apparently encountered at a depth of 24.5 feet in monitoring well MW1.

VII. Risk Assessment

Based on the results of this assessment, groundwater contamination has occurred in the vicinity of Dufresne's Service Center.

The entire area surrounding the site is served by public water supplies, and no supply wells exist within one-half mile downgradient from the site. The nearest downgradient supply well, the Rauille well located approximately 5000 feet east of the site, is not likely to be impacted by the groundwater contamination at the site.

The Hazen residence appears to be the only nearby residence currently impacted by the groundwater contamination. Failure to take any remedial action will likely result in continuing intermittent petroleum vapors in the Hazen residence.

The apartments at Dufresne Service Center and nearby residences to the south and east of Dufresne's may be impacted in the future if the contamination continues to migrate. The rate of migration through the clay and silt soil, however, will probably be quite slow.

The ultimate destination of the contaminated groundwater is the Winooski River, located approximately 1500 feet south of the site.

VIII. RECOMMENDATIONS

Based on the above conclusions, we present the following recommendations regarding the subsurface petroleum contamination at the site:

1. The currently installed monitoring wells MW1 - MW6 should be sampled quarterly and analyzed by EPA Methods 8240, to assess both vertical and lateral contaminant migration over time.

2. Because the on-site USTs are believed to exceed twenty years of age, all of the active gasoline USTs should be replaced. The disused USTs, which have not been used for more than one year, should be removed in accordance with DEC regulations.

3. The top of the Hazen sump should be sealed and vented to the atmosphere, to lessen the potential for continued vapor migration into the Hazen residence. Because the Hazen basement is subject to occasional flooding, this will not eliminate the possibility of continued impact, however.

4. The contaminated soils currently stockpiled on-site should be properly disposed of.

5. A groundwater/soil remediation plan should be developed for the site, to effectively intercept the contaminant plume and protect the Hazen and other downgradient residences.

FIGURES

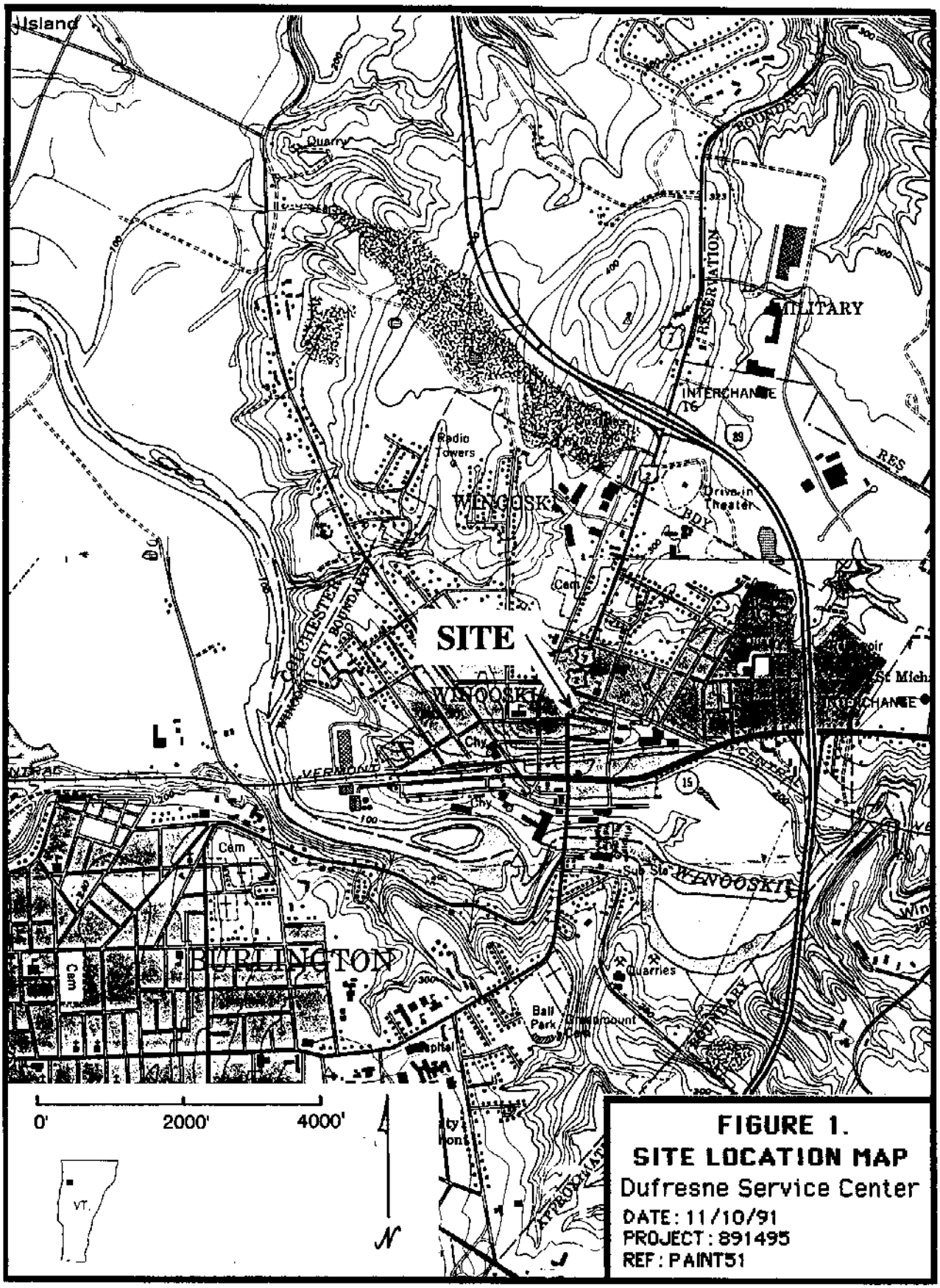


FIGURE 1.
SITE LOCATION MAP
Dufresne Service Center
DATE: 11/10/91
PROJECT: 891495
REF: PAINT51

MAP SOURCES: USGS BURLINGTON, VT 7.5' QUADRANGLE (1948, photorevised 1987)
COLCHESTER, VT 7.5' QUADRANGLE (1948, photorevised 1987)

FIGURE 2.
SITE PLAN
DUFRESNE SERVICE CENTER
WINOOSKI, VT

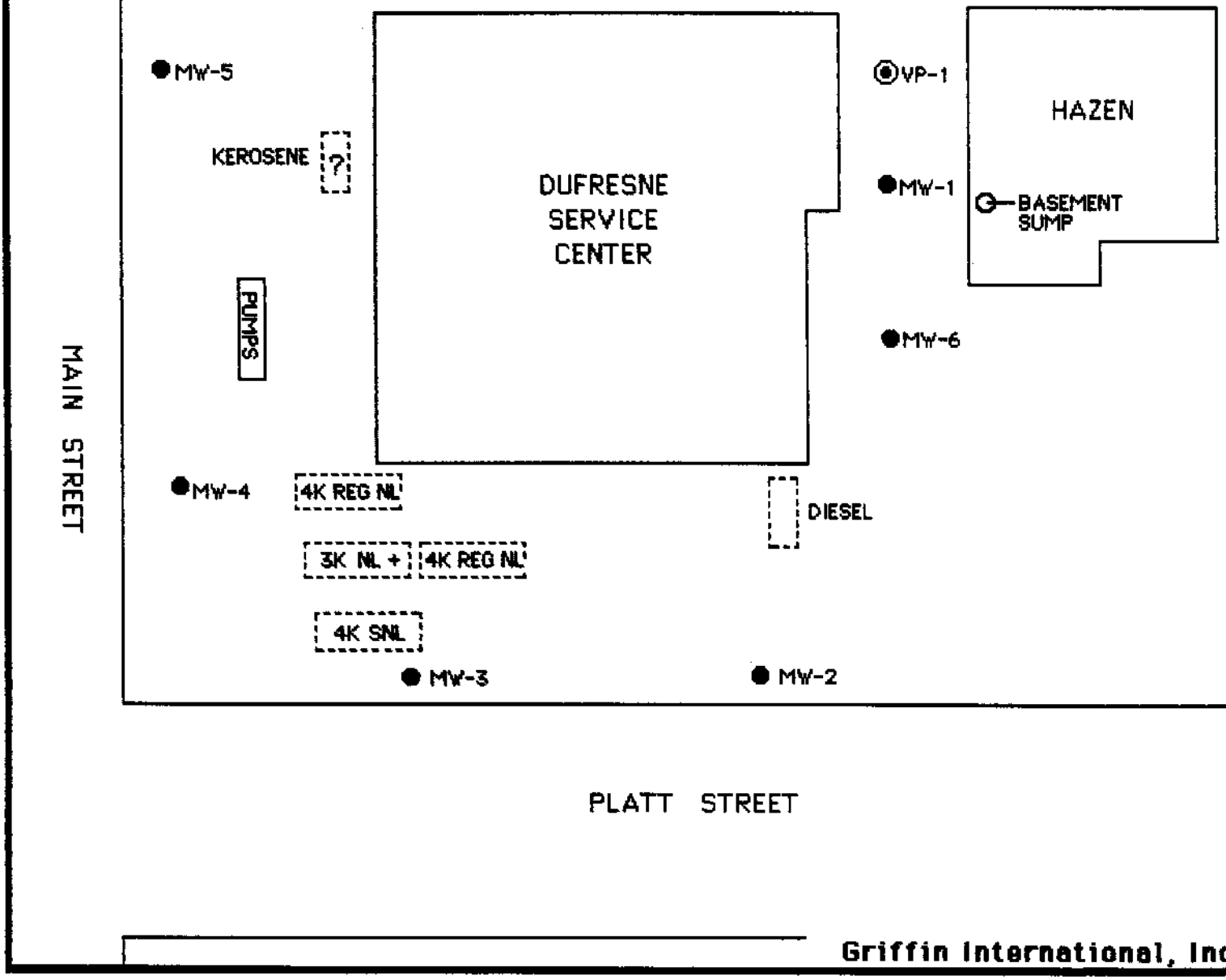
● MONITORING WELL

◉ SOIL VAPOR POINT

[4K REG NL] UNDERGROUND TANK

0' 20' 40'

PROJECT: 891495
REF: PAINT51 11/5/91



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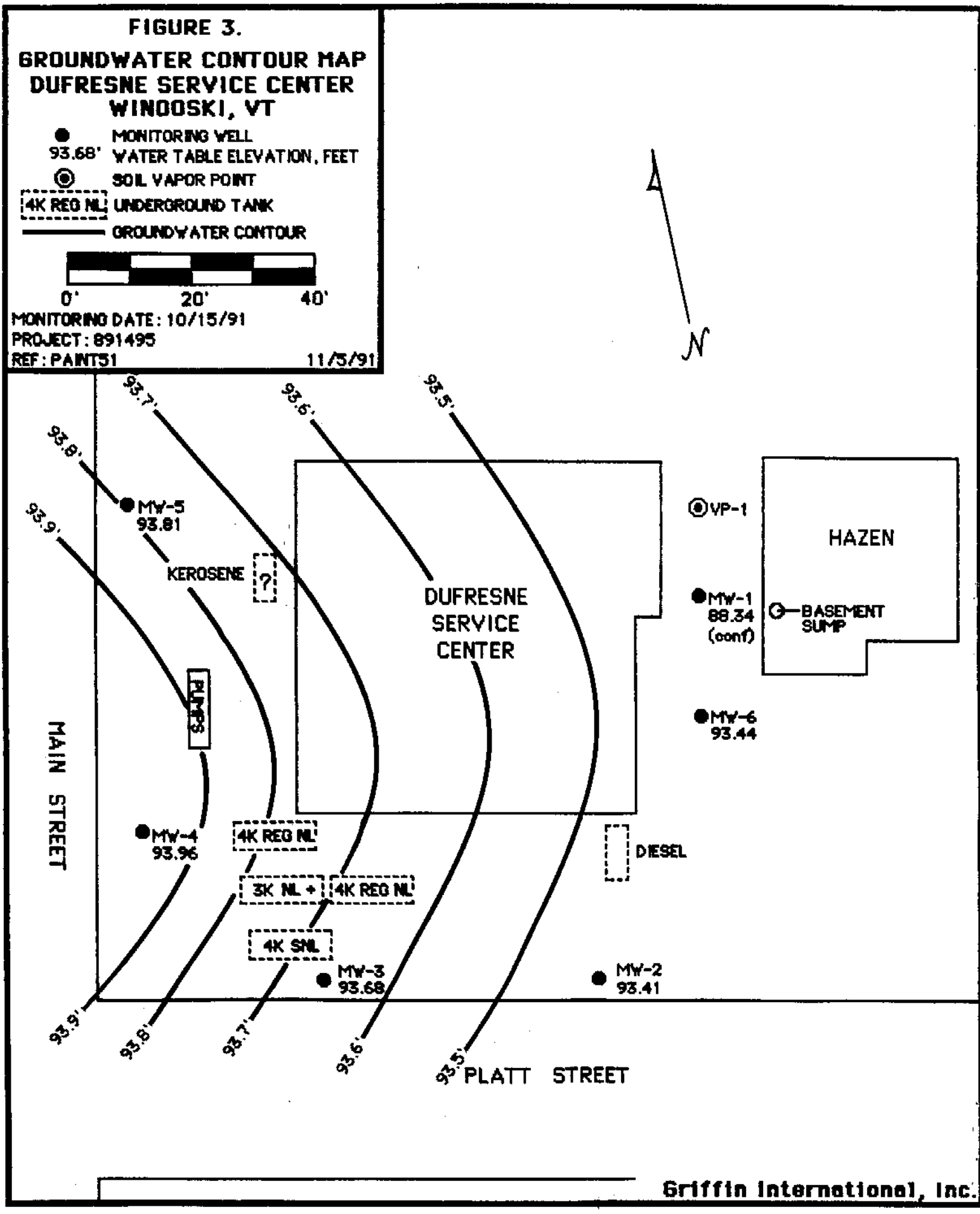


FIGURE 3.
GROUNDWATER CONTOUR MAP
DUFRESNE SERVICE CENTER
WINOOSKI, VT
MONITORING WELL
93.68' WATER TABLE ELEVATION, FEET
SOIL VAPOR POINT
4K REG NL UNDERGROUND TANK
GROUNDWATER CONTOUR
0' 20' 40'
MONITORING DATE: 10/15/91
PROJECT: 891495
REF: PAINT51
11/5/91
N
93.7'
93.6'
93.5'
93.8'
93.9'
MW-5
93.81
KEROSENE
?
DUFRESNE
SERVICE
CENTER
VP-1
HAZEN
MW-1
88.34
(conf)
BASEMENT
SUMP
MW-6
93.44
PUMPS
MAIN STREET
MW-4
93.96
4K REG NL
DIESEL
3K NL + 4K REG NL
4K SNL
MW-3
93.68
MW-2
93.41
93.9'
93.8'
93.7'
93.6'
93.5'
PLATT STREET
Griffin International, Inc.

FIGURE 4.
CONTAMINANT DISTRIBUTION MAP
DUFRESNE SERVICE CENTER
WINOOSKI, VT

● MONITORING WELL

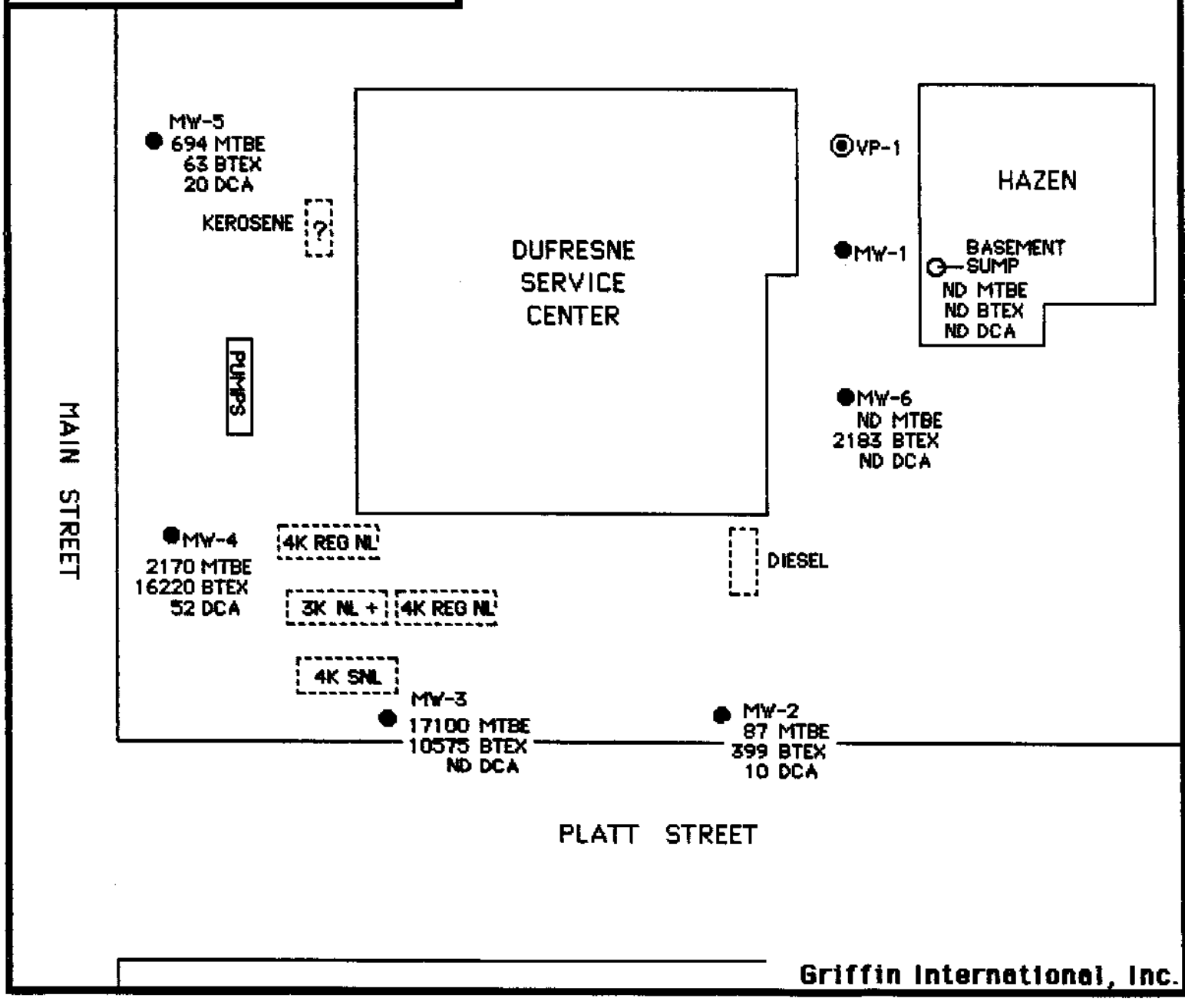
694 MTBE MTBE CONCENTRATION, PPB
63 BTEX TOTAL BTEX, PPB
20 DCA 1,2-DCA, PPB

◉ SOIL VAPOR POINT

4K REG NL UNDERGROUND TANK

0' 20' 40'

SAMPLING DATE: 10/7/91
PROJECT: 891495
REF: PAINT51 11/5/91



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TABLES

TABLE 1. SUMMARY OF LABORATORY RESULTS

	MTBE	Benzene	Ethyl benzene	Toluene	Xylenes	1,2-DCA	Carbon Disulfide	TPH (ppm)
MW 2	**87.3**	**184**	**87.5**	**17.9**	**110**	**10.0**	ND<5	**2.3**
MW3	**17100**	**2850**	**655**	**1060**	**6010**	ND<5	ND<5	**8.2**
MW4	**2170**	**1980**	**1050**	**4130**	**9060**	**52.2**	ND<5	**3.0**
MW5	**694**	**20.3**	**6.51**	ND<5	**36.7**	**19.8**	ND<5	ND<0.8
MW6	ND<5	**54.0**	**430**	**99.4**	**1600**	ND<5	ND<5	**9.5**
MW6 (dup)	ND<5	**61.8**	**432**	**127**	**1710**	ND<5	ND<5	**5.4**
Hazen	ND<5	ND<5	ND<5	ND<5	ND<5	ND<5	**76.7**	ND<0.8
Sump	ND<5	ND<5	ND<5	ND<5	ND<5	ND<5	ND<5	ND<0.8
Trip Blank	ND<5	ND<5	ND<5	ND<5	ND<5	ND<5	ND<5	ND<0.8
Equip Blank	ND<5	ND<5	ND<5	ND<5	ND<5	ND<5	ND<5	ND<0.8

NOTES

TPH: Total Petroleum Hydrocarbons, EPA Method 418.1

Samples collected 10/7/91

Results are given in parts per billion, except where noted

ND < 5- None detected at stated detection limit

APPENDIX A

WELL LOGS

PROJECT DUFRESNE'S SERVICE CENTER

LOCATION 147 MAIN ST., WINOOSKI, VT

DATE DRILLED 9/26/91 TOTAL DEPTH OF HOLE 26.5'

DIAMETER 6"

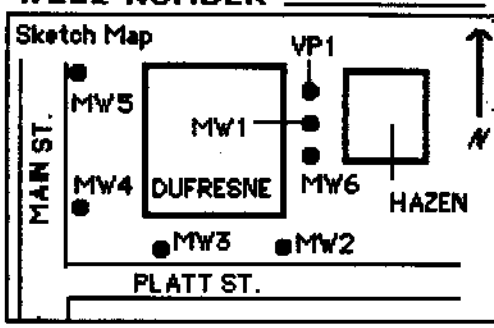
SCREEN DIA. 2" LENGTH 10' SLOT SIZE .020"

CASING DIA. 2" LENGTH 16' TYPE PVC

DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER

DRILLER STEVE LAWRENCE LOG BY RON MILLER

WELL NUMBER MW- 1



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID RESPONSE	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		ROAD BOX		
1		WELL CAP		
		CONCRETE		
2				
3				
4				
5				
6		NATIVE BACKFILL	5.5'-7.5': 4-5-6-8 S1: 11.7 ppm	Gray-Brown SILTY CLAY, moist
7				
8				
9				WATER LEVEL ▼
10				Brown SILTY CLAY, moist, no odor
11			10.5'-12.5': 5-6-9-10 S2: 14.5 ppm	Gray fine SAND, moist,
12				Brown CLAY, moist, no odor
13		BENTONITE		
		WELL RISER		
14				
15				
16			15.5-17.5': 7-8-8-10 S3: 25 ppm	Brown CLAY, moist, no odor Green-Gray fine SAND, moist, petroleum odor
17		GRAVEL PACK		Brown CLAY, moist, no odor
18				Gray CLAY, very moist, no odor
19				
20		WELL SCREEN		
21			20.5-22.5': 5-7-7-8 S4: PID reading not possible due to water vapor	Gray CLAY, very moist
22				
23				
24				
25			24.5-26.5': 29-53-29-57 S5: 8.5 ppm	Gray TILL, wet
26		WELL PLUG		BASE OF EXPLORATION AT 26.5'

Griffin International

REF:PAINT50

PROJECT DUFRESNE'S SERVICE CENTER

LOCATION 147 MAIN ST., WINOOSKI, VT

DATE DRILLED 9/27/91 TOTAL DEPTH OF HOLE 17'

DIAMETER 6"

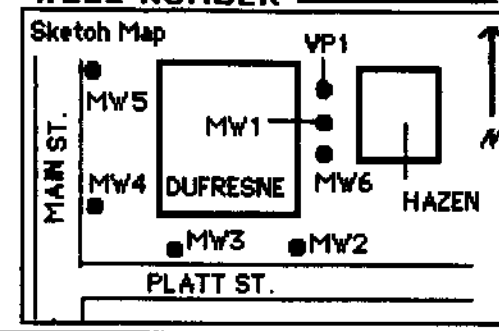
SCREEN DIA. 2" LENGTH 10' SLOT SIZE .020"

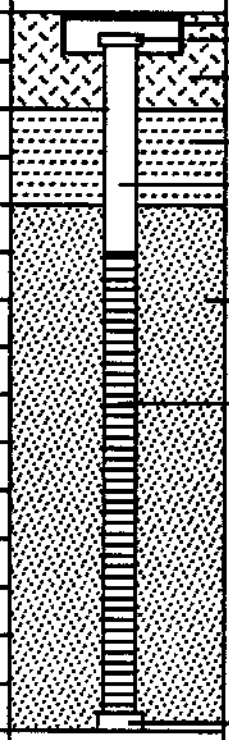
CASING DIA. 2" LENGTH 4.5' TYPE PVC

DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER

DRILLER STEVE LAWRENCE LOG BY RON MILLER

WELL NUMBER MW-2



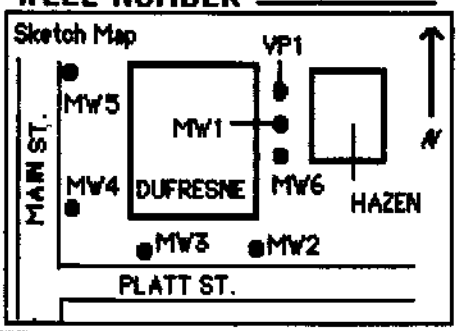
DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID RESPONSE	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0–26		ROAD BOX WELL CAP CONCRETE BENTONITE WELL RISER GRAVEL PACK WELL SCREEN WELL PLUG	5.5'-7.5': 2-3-3-4 S1: 55 ppm 10.5'-12.5': 6-7-6-7 S2: 39 ppm 15'-17': 3-5-5-8 S3: 8.1 ppm	WATER TABLE ▼ Gray-Brown SILT, some clay, wet Gray-Brown CLAY w/mottles, wet Gray CLAY, wet Gray CLAY, wet, 8.1 ppm BASE OF EXPLORATION AT 17'

Griffin International

REF: PAINT50

PROJECT DUFRESNE'S SERVICE CENTER
LOCATION 147 MAIN ST., WINOOSKI, VT
DATE DRILLED 9/27/91 TOTAL DEPTH OF HOLE 13'
DIAMETER 6"
SCREEN DIA. 2" LENGTH 10' SLOT SIZE .020"
CASING DIA. 2" LENGTH 2.5' TYPE PVC
DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER
DRILLER STEVE LAWRENCE LOG BY RON MILLER

WELL NUMBER MW-3

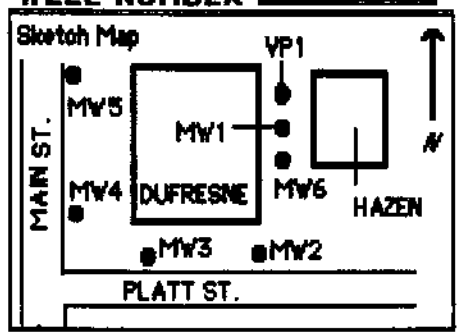


DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID RESPONSE	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		ROAD BOX		
1		WELL CAP		
		CONCRETE		
2		BENTONITE		
3		WELL RISER		
4		WELL SCREEN		
5				WATER TABLE ▼
6		GRAVEL PACK	5.5'-7.5': 5-3-3-2 S1: 83 ppm S2: 138 ppm	Non-representative spoon sample, S1 Auger cutting sample at 6': Green CLAY, wet, S2
7				
8				
9				
10				
11			10.5'-12.5': 5-6-7-9 S3: 35 ppm	Green-Brown CLAY, moist
12				
13				BASE OF EXPLORATION AT 13'
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

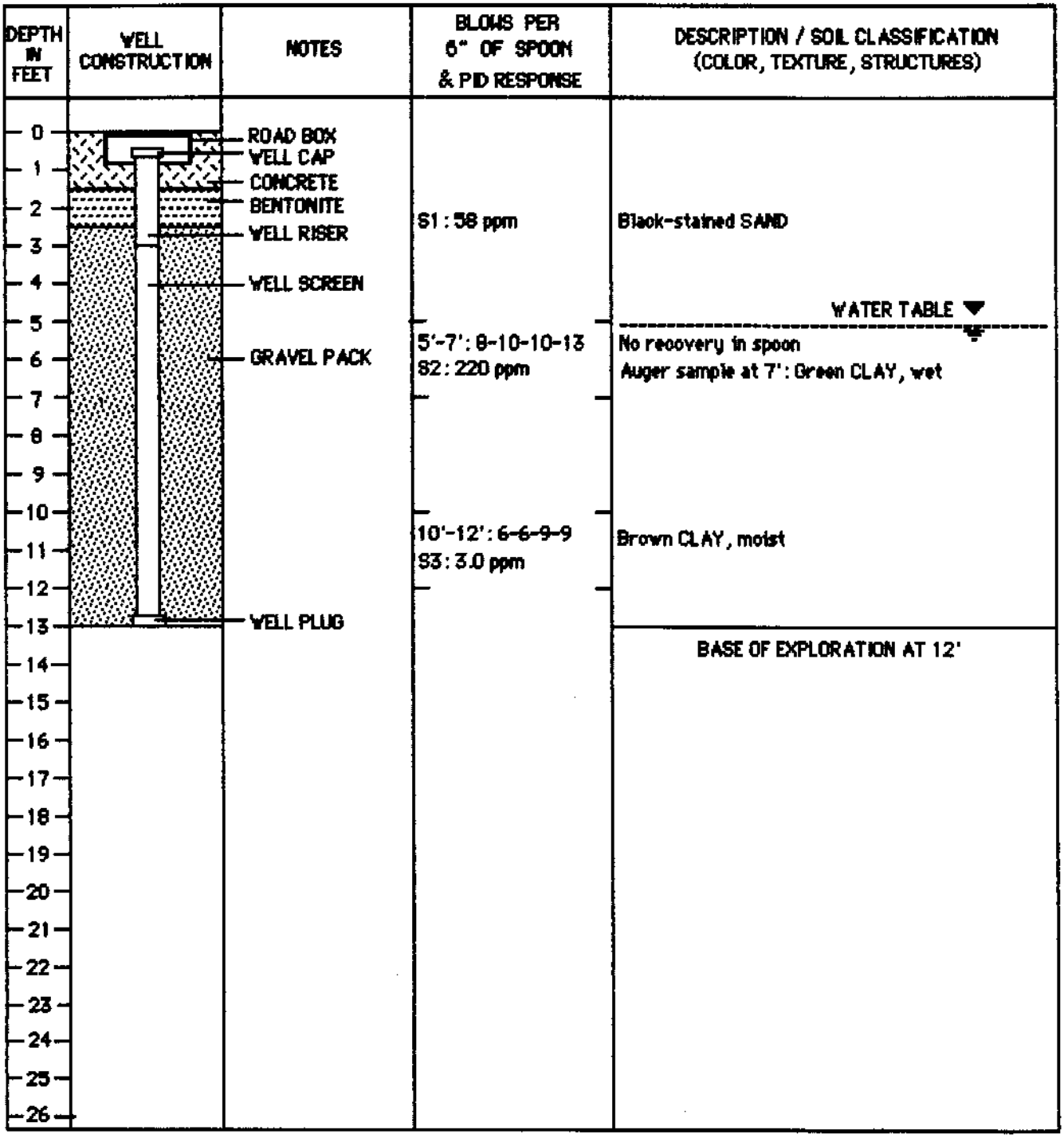
Griffin International
REF:PAINT50

PROJECT DUFRESNE'S SERVICE CENTER
LOCATION 147 MAIN ST., WINOOSKI, VT

WELL NUMBER MW-4



DATE DRILLED _____ TOTAL DEPTH OF HOLE ____
DIAMETER 6"
SCREEN DIA. 2" LENGTH 10' SLOT SIZE .020"
CASING DIA. 2" LENGTH 2.5 TYPE PVC
DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER
DRILLER STEVE LAWRENCE LOG BY RON MILLER



Griffin International
REF :PAINT30

PROJECT DUFRESNE'S SERVICE CENTER

LOCATION 147 MAIN ST., WINOOSKI, VT

DATE DRILLED 10/1/91 TOTAL DEPTH OF HOLE 12'

DIAMETER 6"

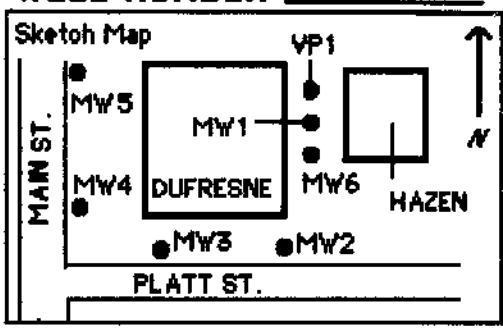
SCREEN DIA. 2" LENGTH 9' SLOT SIZE .020"

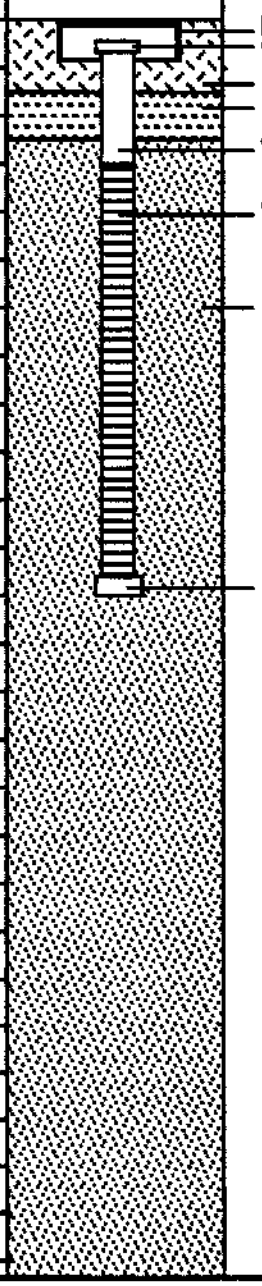
CASING DIA. 2" LENGTH 2.5' TYPE PVC

DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER

DRILLER STEVE LAWRENCE LOG BY RON MILLER

WELL NUMBER MW-5



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID RESPONSE	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0–26		ROAD BOX WELL CAP CONCRETE BENTONITE WELL RISER WELL SCREEN GRAVEL PACK	5.5'-7.5': 6-15-7-8 S1 : 78 ppm	Dark Brown SAND and GRAVEL, some silt Yellow-Red BRICK W.T. Light Brown SAND and GRAVEL, wet Gray CLAY, some silt, wet
			10'-12': 10-7-10-12 S2 : 1.1 ppm	Brown CLAY, very moist
				BASE OF EXPLORATION AT 12'

Griffin International

REF :PAINT50

PROJECT DUFRESNE'S SERVICE CENTER

LOCATION 147 MAIN ST., WINOOSKI, VT

DATE DRILLED 10/1/91 TOTAL DEPTH OF HOLE 12.5'

DIAMETER 6"

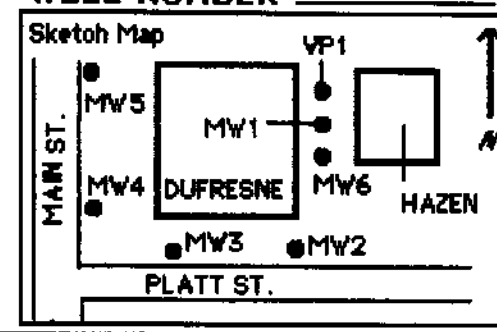
SCREEN DIA. 2" LENGTH 9' SLOT SIZE .020"

CASING DIA. 2" LENGTH 2.5' TYPE PVC

DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER

DRILLER STEVE LAWRENCE LOG BY RON MILLER

WELL NUMBER MW-6



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID RESPONSE	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		ROAD BOX		
1		WELL CAP		
		CONCRETE		
2		BENTONITE		
3		WELL RISER		
4		WELL SCREEN		
5				WATER TABLE ▼
6		GRAVEL PACK	5.5'-7.5': 7-5-6-7 S1: 0.4 ppm	Green-Brown SILT and CLAY, very moist
7				
8				
9			S3: 235 ppm	Sampled Auger flight: Brown CLAY, very moist
10				
11			10.5'-12.5': 5-3-5-7	Brown CLAY, tr. silt, very moist
12		BOTTOM CAP	S2: 28 ppm	
13				BASE OF EXPLORATION AT 12.5'
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

Griffin International

REF:PAINT50

PROJECT DUFRESNE'S SERVICE CENTER

LOCATION 147 MAIN ST., WINOOSKI, VT

DATE DRILLED 9/26/91 TOTAL DEPTH OF HOLE 6'

DIAMETER 6"

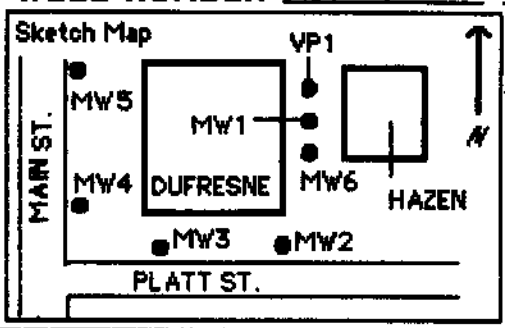
SCREEN DIA. 2" LENGTH 4' SLOT SIZE .020"

CASING DIA. 2" LENGTH 1.5' TYPE PVC

DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER

DRILLER STEVE LAWRENCE LOG BY RON MILLER

WELL NUMBER VP-1



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		ROAD BOX		
		WELL CAP		
		CONCRETE		
1		BENTONITE		
2		WELL RISER		
3				
4		WELL SCREEN		
5		GRAVEL PACK	4'-6': 7-11-7-8 S1 : 0.2 ppm	Green-Brown CLAY, very moist
6		WELL CAP		BASE OF EXPLORATION AT 6'
7				
8				
9				
10				
11				
12				
13				
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24				
25				
26				

Griffin International

REF :PAINT50

APPENDIX B

WATER LEVEL DATA

LIQUID LEVEL MONITORING DATA

PROJECT: 891495 DUFRESNE SERVICE CENTER

LOCATION: WINOOSKI, VT

DATE: 10/15/91

WELL I.D.	WELL DEPTH	TOP OF CASING ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PRODUCT THICKNESS	SPECIFIC GRAVITY OF PRODUCT	HYDRO EQUIVALENT	CORRECTED DEPTH TO WATER	CORRECTED WATER TABLE ELEVATION
MW1	26.5	98.19		9.85					88.34
MW2	15	98.51		5.10					93.41
MW3	13	98.73		5.05					93.68
MW4	13	99.27		5.31					93.96
MW5	12	100.00		6.19					93.81
MW6	12	98.59		5.15					93.44

COMMENTS:

MW1 is in separate aquifer

Griffin International

APPENDIX C

LABORATORY ANALYSIS RESULTS

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Griffin International
PROJECT NAME: Dufresne Service Center
REPORT DATE: October 21, 1991
SAMPLER: Ron Miller
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991

ANALYSIS DATE: October 11, 1991
STATION: MW 2
REF.#: 24,628
TIME SAMPLED: 10:05

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	184.
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	10.0
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzenes	5	ND
1,2 Dichlorobenzenes	5	ND
1,4 Dichlorobenzenes	5	ND

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
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(802) 879-4333
FAX 879-7103

EPA METHOD 8240 (continued) Ref.#: 24,628

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	87.5
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	17.9
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	110.
MTBE	5	87.3
Trichloroflouromethane	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 13

NOTES:

1 None detected

Reviewed by _____

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Griffin International
PROJECT NAME: Dufresne Service Center
REPORT DATE: October 21, 1991
SAMPLER: Ron Miller
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991

ANALYSIS DATE: October 11, 1991
STATION: MW 3
REF.#: 24,627
TIME SAMPLED: 9:30

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	2,850.
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzenes	5	ND
1,2 Dichlorobenzenes	5	ND
1,4 Dichlorobenzenes	5	ND

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
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EPA METHOD 8240 (continued) Ref.#: 24,627

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	655.
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	1,060.
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	6,010.
MTBE	5	17,100.
Trichloroflouromethane	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 3

NOTES:

1 None detected

Reviewed by _____

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Griffin International
PROJECT NAME: Dufresne Service Center
REPORT DATE: October 21, 1991
SAMPLER: Ron Miller
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991

ANALYSIS DATE: October 11, 1991
STATION: MW 4
REF.#: 24,629
TIME SAMPLED: 10:40

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	1,980.
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	52.2
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzenes	5	ND
1,2 Dichlorobenzenes	5	ND
1,4 Dichlorobenzenes	5	ND

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
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EPA METHOD 8240 (continued) Ref.#: 24,629

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	1,050.
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	4,130.
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	9,060.
MTBE	5	2,170.
Trichloroflouromethane	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 13

NOTES:

1 None detected

Reviewed by _____

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Griffin International
PROJECT NAME: Dufresne Service Center
REPORT DATE: October 21, 1991
SAMPLER: Ron Miller
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991

ANALYSIS DATE: October 11, 1991
STATION: MW 5
REF.#: 24,626
TIME SAMPLED: 8:50

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	20.3
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	19.8
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzenes	5	ND
1,2 Dichlorobenzenes	5	ND
1,4 Dichlorobenzenes	5	ND

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

EPA METHOD 8240 (continued) Ref.#: 24,626

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	6.51
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	36.7
MTBE	5	694.
Trichloroflouromethane	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 4

NOTES:

1 None detected

Reviewed by _____

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Griffin International
PROJECT NAME: Dufresne Service Center
REPORT DATE: October 21, 1991
SAMPLER: Ron Miller
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991

ANALYSIS DATE: October 11, 1991
STATION: MW 6
REF.#: 24,630
TIME SAMPLED: 11:15

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	54.0
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzenes	5	ND
1,2 Dichlorobenzenes	5	ND
1,4 Dichlorobenzenes	5	ND

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
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EPA METHOD 8240 (continued) Ref.#: 24,630

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	430.
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	99.4
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	1,600.
MTBE	5	ND
Trichloroflouromethane	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 4

NOTES:

1 None detected

Reviewed by _____

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Griffin International
PROJECT NAME: Dufresne Service Center
REPORT DATE: October 21, 1991
SAMPLER: Ron Miller
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991

ANALYSIS DATE: October 11, 1991
STATION: MW Duplicate
REF.#: 24,621
TIME SAMPLED: Not Indicated

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	61.8
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzenes	5	ND
1,2 Dichlorobenzenes	5	ND
1,4 Dichlorobenzenes	5	ND

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

EPA METHOD 8240 (continued) Ref.#: 24,621

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	432.
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	127.
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	1,710.
MTBE	5	ND
Trichloroflouromethane	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 8

NOTES:

1 None detected

Reviewed by _____

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Griffin International
PROJECT NAME: Dufresne Service Center
REPORT DATE: October 21, 1991
SAMPLER: Ron Miller
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991

ANALYSIS DATE: October 11, 1991
STATION: Hazen Sump
REF.#: 24,625
TIME SAMPLED: 7:35

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	76.7
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzenes	5	ND
1,2 Dichlorobenzenes	5	ND
1,4 Dichlorobenzenes	5	ND

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
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FAX 879-7103

EPA METHOD 8240 (continued) Ref.#: 24,625

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	ND
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	ND
MTBE	5	ND
Trichloroflouromethane	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____

ENDYNE, INC.

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LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Griffin International
PROJECT NAME: Dufresne Service Center
REPORT DATE: October 21, 1991
SAMPLER: Ron Miller
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991

ANALYSIS DATE: October 11, 1991
STATION: Trip Blank
REF.#: 24,623
TIME SAMPLED: 11:20

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzenes	5	ND
1,2 Dichlorobenzenes	5	ND
1,4 Dichlorobenzenes	5	ND

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EPA METHOD 8240 (continued) Ref.#: 24,623

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	ND
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	ND
MTBE	5	ND
Trichloroflouromethane	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____

ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Griffin International
PROJECT NAME: Dufresne Service Center
REPORT DATE: October 21, 1991
SAMPLER: Ron Miller
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991

ANALYSIS DATE: October 11, 1991
STATION: Equipment Blank
REF.#: 24,624
TIME SAMPLED: 11:35

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzenes	5	ND
1,2 Dichlorobenzenes	5	ND
1,4 Dichlorobenzenes	5	ND

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EPA METHOD 8240 (continued) Ref.#: 24,624

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	ND
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	ND
MTBE	5	ND
Trichloroflouromethane	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____

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LABORATORY REPORT

TOTAL HYDROCARBONS - EPA METHOD 418.1

CLIENT: Griffin International
REPORT DATE: October 28, 1991
PROJECT NAME: Dufresne Service Center
DATE SAMPLED: October 7, 1991
DATE RECEIVED: October 7, 1991
DATE ANALYZED: October 28, 1991
SAMPLER: Ron Miller

Reference number:	Station ID:	Concentration (mg/L)[1]
24,630	MW duplicate	5.4
24,632	Trip Blank; 11:20	ND
24,633	Equipment Blank; 11:35	ND
24,634	Hazen Sump; 07:35	ND
24,635	MW 5; 08:50	ND
24,636	MW 3; 09:30	8.2
24,637	MW 2; 10:05	2.3
24,638	MW 4; 10:40	3.0
24,639	MW 6; 11:15	9.5

Notes:

1 Method detection limit is 0.8 ppm

Reviewed by _____